

---

**Human Embryonic Stem Cell-Derived Neural Stem Cells for Severe Spinal Cord Injury (SCI)**

**Grant Award Details**

---

Human Embryonic Stem Cell-Derived Neural Stem Cells for Severe Spinal Cord Injury (SCI)

**Grant Type:** Therapeutic Translational Research Projects

**Grant Number:** TRAN1-11579

**Investigator:**

<b>Name:</b>	Mark Tuszynski
<b>Institution:</b>	University of California, San Diego
<b>Type:</b>	PI

---

**Disease Focus:** Neurological Disorders, Spinal Cord Injury

**Human Stem Cell Use:** Embryonic Stem Cell

**Award Value:** \$6,235,897

**Status:** Pre-Active

**Grant Application Details**

---

**Application Title:** Human Embryonic Stem Cell-Derived Neural Stem Cells for Severe Spinal Cord Injury (SCI)

**Public Abstract:****Translational Candidate**

Hg (WA09) embryonic stem cell-derived neural stem cells with a spinal cord identity (Hg-NSCsc)

**Area of Impact**

Severe spinal cord injury

**Mechanism of Action**

Our candidate therapy for SCI uses human neural stem cells in a gel-like matrix containing growth factors. We aim to fill the injury site with replacement neural stem cells that can form new neural "relays" across the injury to restore function. This approach may potentially treat severe SCI by repairing injured connections, in contrast to other stem cell clinical trials for SCI that only aim to improve the function of axons that are spared by the injury.

**Unmet Medical Need**

20,000 Americans sustain SCI each year, and more than 300,000 live with chronic injury, extracting a huge physical, emotional and financial toll. There are no therapies to repair the spinal cord. We aim to regenerate the injured spinal cord by "splicing" neural circuits, thereby restoring function.

**Project Objective**

Pre-IND meeting

**Major Proposed Activities**

- Generate GMP-compliant Hg ESC Master and Working cell banks (MCB, WCB), as well as GMP-compatible Hg-NSCsc MCB and WCBs.
- Rodent studies to establish proof of concept and pilot safety.
- Develop Chemistry, Manufacturing, and Control (CMC) characterization and release assays for the candidate Hg-NSCsc.

**Statement of Benefit to California:**

SCI affects approximately 300,000 people in the U.S., with more than 20,000 new injuries per year. People with SCI often endure decades of severe disability, with staggering physical, emotional, and financial costs. The first year of treatment alone is \$1 million for a quadriplegic patient. Better treatments are needed, and even a modest increase in functional capacity (1-2 spinal levels) can produce meaningful improvement in quality of life and cost savings for California.

---

**Source URL:** <https://www.cirm.ca.gov/our-progress/awards/human-embryonic-stem-cell-derived-neural-stem-cells-severe-spinal-cord-injury>